Unit-2 Mastery Assessment (version 629)

Question 1 (10 points)

Let f represent a function. If $f[3] = 5$, then there exists a knowable solution to the equation below.

$$y = 6 \cdot f\left[\frac{x+2}{8}\right] + 18$$
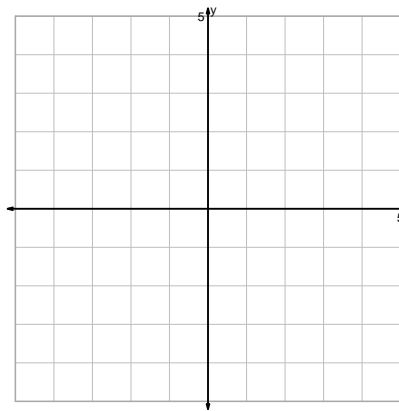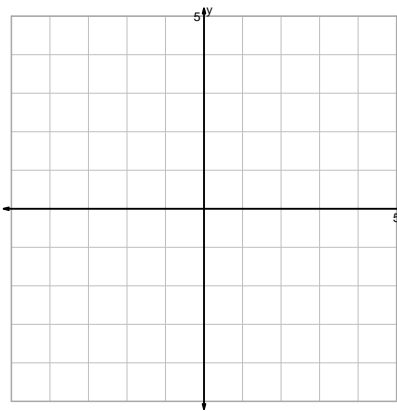
Find the solution.

$x =$

$y =$

Question 2 (20 points)

Graph the equations accurately. For each integer-integer point on the parent, indicate the corresponding point precisely. Also, with dashed lines, indicate any asymptotes.
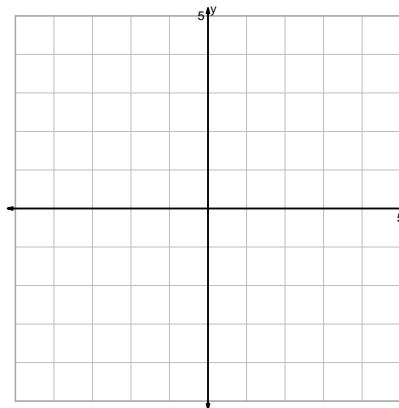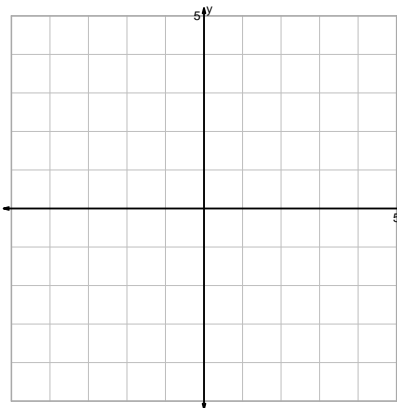
$y = 2 \cdot x^2$

$y = \sqrt[3]{2x}$

$y = 2^{x+2}$
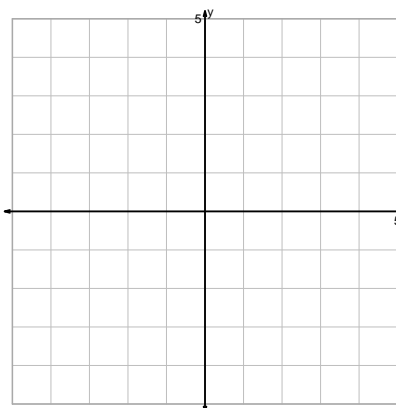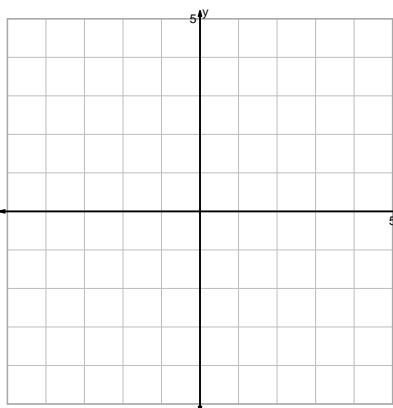

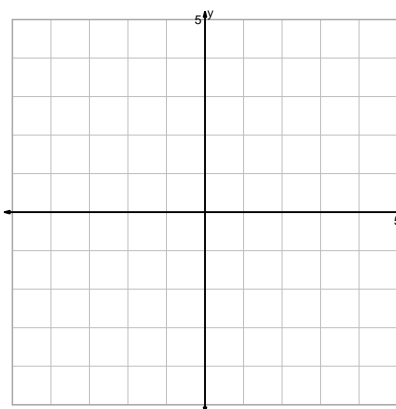$y = \left(\dfrac{x}{2}\right)^2$
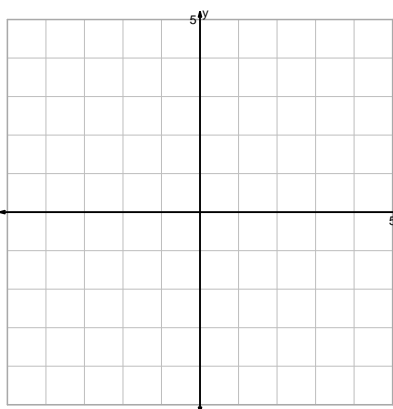
$$y = \left(x - 2\right)^3$$

$$y = \sqrt[3]{x} + 2$$

$$y = \log_2\left(-x\right)$$
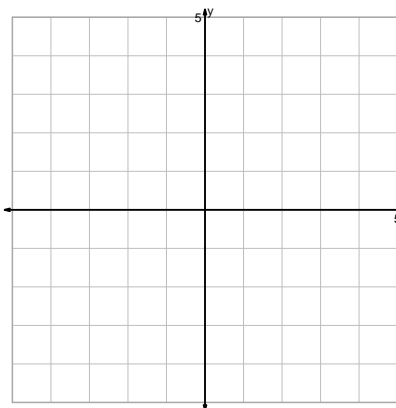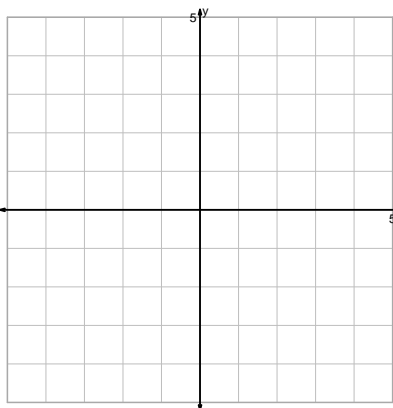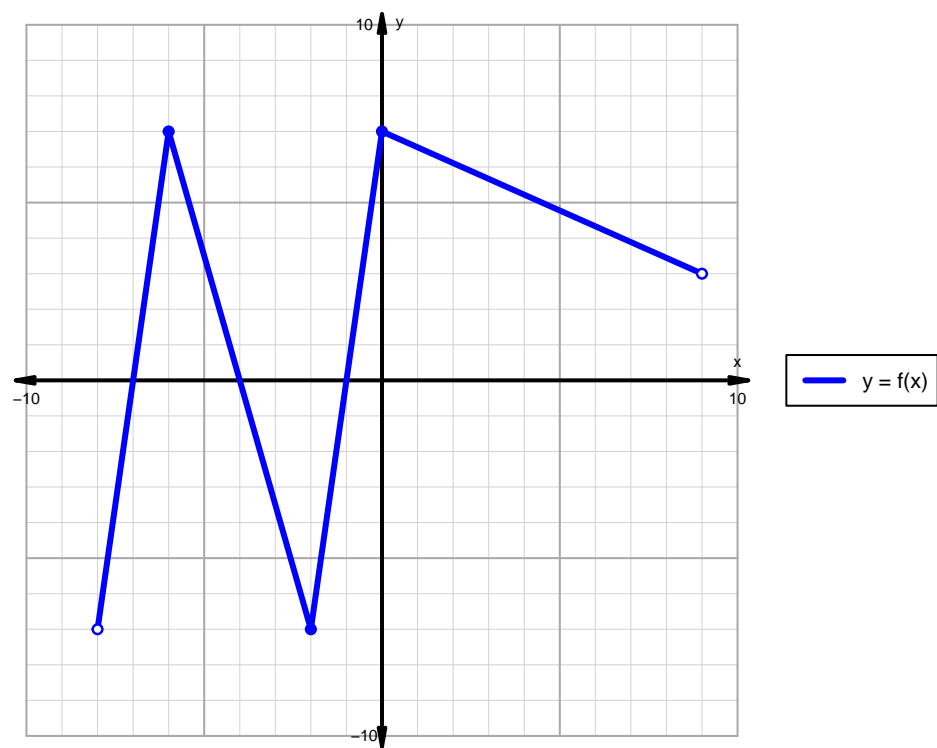
$$y = \frac{\sqrt{x}}{2}$$

$$y = x^3 - 2$$

$$y = -2^x$$
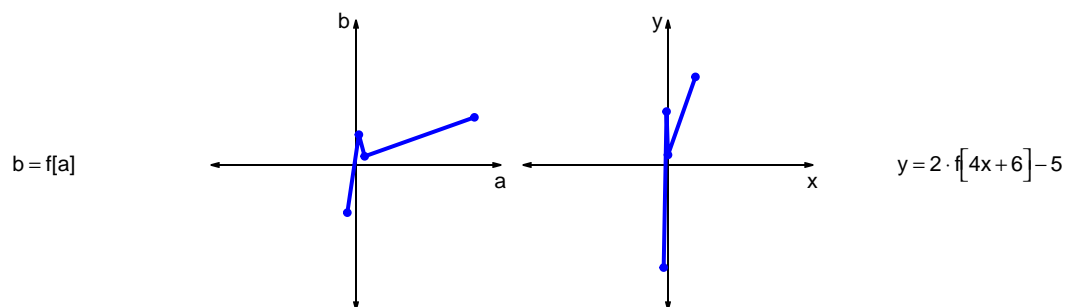
Question 3 (20 points)

A function is graphed below.

Indicate the following intervals using interval notation.

Feature	Where
Positive	
Negative	
Increasing	
Decreasing	
Domain	
Range	

Question 4 (20 points)

Let f represent a function. The curves $b = f[a]$ and $y = 2 \cdot f[4x + 6] - 5$ are represented below in a table and on graphs.

a	b	x	y
-6	-33	-3	-71
2	21	-1	37
6	6	0	7
82	33	19	61

$b = f[a]$

$y = 2 \cdot f\left[4x + 6\right] - 5$

a. Write formulas for calculating x from a and calculating y from b. (Or, write the coordinate transformation formula.)

b. What geometric transformations (using words like translation, stretch, and shrink), and in what order, would transform the first curve $y = f[x]$ into the second curve $y = 2 \cdot f[4x + 6] - 5$?

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Question 5 (10 points)

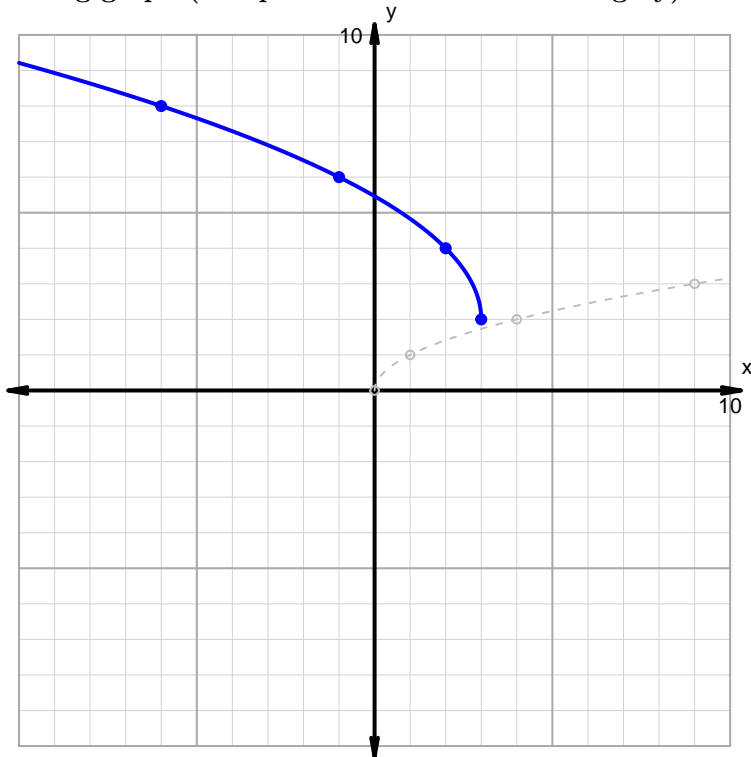A parent square-root function is transformed in the following ways:

Horizontal transformations

1. Translate left by distance 3.
2. Horizontal reflection over y axis.

Vertical transformations

1. Translate up by distance 1.
2. Vertical stretch by factor 2.

Resulting graph (and parent function in dashed grey):

- What is the equation for the curve shown above?

Question 6 (20 points)

Make an accurate graph, and describe locations of features.

$$y = \frac{1}{2} \cdot |x + 2| - 1$$

Feature	Where
Domain	
Range	
Positive	
Negative	
Increasing	
Decreasing	